SR-3 00228747

SX-70
SODR-X-TRACTOR HANDPIECE
PACE P/N 6010-0077
OPERATION & MAINTENANCE INSTRUCTIONS
PART NUMBER 5050-0334
REV. B

For any questions regarding the following instructions, contact your local authorized PACE dealer or contact PACE directly at:
TEL. (301) 490-9860, FAX (301) 604-9215

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Laurel MD 20723-1990

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These instructions detail the basic operational guidelines for using the SX-70 Sodr-X-Tractor handpiece. A detailed Operation & Maintenance manual is available from PACE.

SX-70 Capabilities

The SX-70 Sodr-X-Tractor handpiece provides thermally enhanced through-hole desoldering on extra heavy multilayer assemblies, especially during continuous use and features a large easy-to-clean solder reservoir. The SX-70 also provides safe, continuous removal of old or excess solder from surface mount lands. Its slim-line, pencil grip design and finger actuated vacuum switch facilitates ease of use and manipulation in tight places. The SX-70 is a member of the PACE SensaTemp family of advanced handpieces.

CAUTION

Always return heated handpieces to the appropriate Hot Cubby when not in use. Failure to do so may cause burns to the operator, equipment or work surfaces and may be a potential ignition source if combustible materials are nearby. Always use this handpiece in a well ventilated area to avoid inhalation of fumes created by solder flux gases.

Handpiece Setup

NOTE

If using your SX-70 Sodr-X-Tractor handpiece for the first time or if you have just replaced the heater, we recommend that you follow the "SX-70 Heater Burn-in" procedure (Red tag on handpiece) to increase the life expectancy of the heater.

Connect the handpiece cable assembly connector plug to one of the handpiece power receptacles on your PACE SensaTemp power source. PACE recommends that air-operated handpieces utilize the power receptacles closest to the **SNAP-VAC** (or **VACUUM OPTION**) Port to minimize cord tangles.

Connect an air hose and VisiFilter assembly to the SX-70 and the **SNAP-VAC** Port using one of the methods described in the "Air Hose Connection" section following. Referring to the SX-70 Sodr-X-Tractor charts in your Tip & Temperature Selection System (TTSS), select and install a tip appropriate for your application into the Sodr-X-Tractor.

Select and enter your desired true operating temperature on your PACE power source. To save tip life and reduce the possibility of damage, PACE recommends using the lowest possible tip temperature that will provide rapid yet controllable melt of the entire solder joint to be extracted. Begin with an operating temperature in the range of 316°C (600°F) and increase as necessary.

AIR Hose Connection

There are two methods of attaching the air hose from the power source to the SX-70. Select the method which best suits your needs. The Quick Connect Method is best suited for Thermal Management Center configurations where multiple air handpieces may be in use. The Traditional Connection Method is best suited for single air handpiece configurations.

> **NOTE**
>
> Regardless of connection method, ensure that only one air handpiece is connected to either the **SNAP-VAC** or Controllable **PRESSURE** Port at one time. Attachment to both ports simultaneously will cause a deterioration of performance.

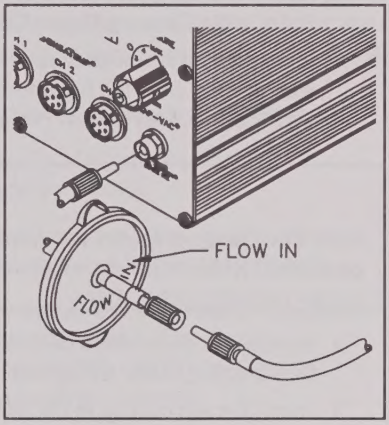
Quick Connect Method

To set up your SX-70 for the quick connect/disconnect vacuum operation, perform the following steps:

1. Attach a 1 inch (2.5cm) length of clear pvc air hose to the metal tube in the back of the handpiece.
2. To the other end of the 1 inch (2.5cm) air hose, attach a female quick disconnect hose mount fitting (P/N 1259-0086).
3. Secure the air hose to the handpiece cable assembly with a cable clip (P/N 1321-0085-01).
4. Prepare a quick connect air hose by inserting a male quick connect fitting into each end of a 54.0 inch (137cm) length of air hose. You may already have this piece made up if you have other air handpieces configured with the quick connect method.

5. Prepare a VisiFilter by connecting a 1 inch (2.5cm) length of clear pvc air hose to each side of the VisiFilter. To the free end of the air hose connected to the FLOW IN side of the VisiFilter, insert a female quick connect hose mount fitting (P/N 1259-0086). Connect the 54 inch (137cm) length of air hose to this end of the VisiFilter and the SX-70 handpiece.

6. Connect the ridged end of a male quick connect hose mount fitting (P/N 1259-0087) to the free end of the air hose connected to the FLOW OUT side of the VisiFilter. Insert the male quick connect hose mount fitting into the power source **SNAP-VAC** (or **VACUUM OPTION**) Port.



NOTE

Always use your SX-70 Sodr-X-Tractor with a clean VisiFilter element. Otherwise a deterioration in performance or damage to the unit may occur.

Traditional Connection Method

1. Connect the 54 inch (137cm) length of air hose to the metal tube in the back of the handpiece.

2. Insert the ridged end of a male quick connect hose mount fitting (P/N 1259-0087) into the free end of the 54 inch (137cm) length of air hose.

3. Prepare a Visifilter as described in steps 5 & 6 above (Quick Connect Method).

4. Attach the 54 inch (137cm) length of air hose to the VisiFilter assembly.

Tip Installation

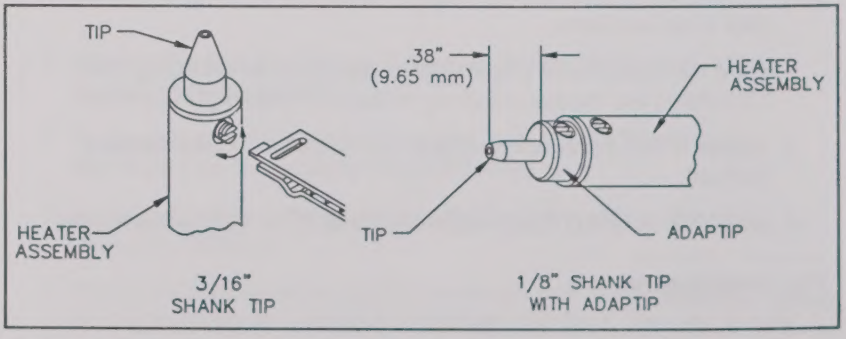
The following instructions are for tip installation only. If a tip is currently installed in the handpiece, remove the installed tip (heater hot) and clean the heater bore using the supplied wire brushes prior to the installation of a new tip.

1. Select the proper tip for your application.
2. Ensure that the glass solder collection chamber is properly installed. Refer to the Cleaning Solder Collection Chamber section.
3. If an AdapTip is installed, remove from heater and clean with a 1/8 inch wire brush. Clean the front portion of the heater bore with a 3/16 inch wire brush. Clean the rear portion of the heater bore with a 1/8 inch wire brush.

CAUTION

Hold the handpiece with the heater body pointing up to prevent injury to personnel when cleaning. This will allow dislodged material to fall into the solder collection chamber.

4. Inspect and clean the solder collection chamber as necessary. Refer to the Cleaning Solder Collection Chamber section.
5. Install the selected tip in the following manner.
   a) To install 3/16" shank Desoldering and Flo-D-Sodr Tips, hold handpiece with the heater end up (heater hot), insert tip all the way and gently tighten heater set screw.
   b) To install 1/8" shank Micro Tips, first insert AdapTip into heater (heater hot) all the way and GENTLY tighten heater set screw. Then, while holding the handpiece horizontally, insert selected tip into AdapTip opening using the Tip Tool as a gauge, leaving 3/8" (1cm) of tip extending out of the AdapTip, and gently tighten AdapTip set screw.



7. After a short period (1-2 minutes) recheck the set screw(s) to ensure that it remains snug. Use the appropriate Tip & Temperature Selection Charts to enter the appropriate temperature for your application.

Tip Preparation

Proper tip preparation will insure optimum results and increase tip life. Follow this procedure before each component removal or land preparation operation and prior to storage of the handpiece in the Hot Cubby.

1. Insure that the installed tip has reached the desired set tip temperature.
2. Using a moistened fiber tool (part of the Tip Maintenance Station), remove all solder dross and flux residue from the tip.
3. Wipe the Sodr-X-Tractor tip using the moistened sponge cleaning tool or the moistened sponge area of the Tip Maintenance Station or Hot Cubby.
4. All Thermo-Drive and Long Life (3/16" shank) tips are tinnable. Using a large gauge, flux core wire solder, tin the end of these tips. Proper tinning enhances heat transfer and extends tip life. All Micro Tips (1/8" shank) are not tinnable and must be used with the Adaptip.
5. The Sodr-X-Tractor handpiece is now ready for use. If not immediately using the handpiece, return it to its proper place in the Hot Cubby.

To maximize tip life, it is important to clean the tip and tin it with solder before removal.

Thru-Hole Solder Extraction

Follow the steps below to obtain the best results in through-hole solder extraction.

1. Ensure that the air hose is connected to a VisiFilter and the **SNAP-VAC** (or **VACUUM OPTION**) Port on the power source. Select an operating temperature that will cause complete solder melt in about 2-5 seconds . A tip temperature of 316°C (600°F) is recommended for most applications. Tip temperatures in excess of 399°C (750°F) are not recommended.
2. Position your index finger just to the front of the vacuum control switch found on the handpiece. With a rocking motion, the finger will make contact with the switch and actuate the vacuum. On ST 50(E)V systems, vacuum is actuated with the PED-A-VAC foot pedal only.
3. Gently position the extractor tip over the lead contacting the solidified solder with the tip perpendicular to the board. As the solder melts, allow the extractor tip to fall further into the solder, but do not allow the tip to come in contact with the land itself.

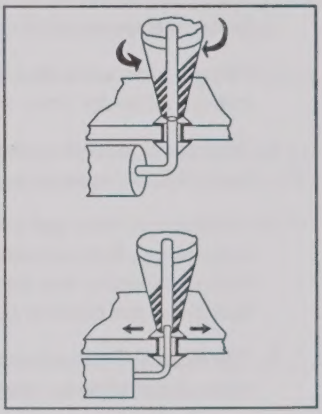
NOTE

Do not apply pressure against the lands at any time during this operation. Damage to the board may result.

4. Gently move the lead ...

   a) in a circular motion for round leads

   b) in a back and forth motion for flat leads until the lead moves freely. Free lead movement indicates that complete solder melt has been obtained.



5. While continuing to move the lead, actuate vacuum with the finger switch (or foot pedal). The length of time from when heat is applied until the time vacuum is started (e.g., complete solder melt) should be 2-5 seconds under normal conditions. Heavy multilayer boards may require somewhat longer heating times.

6. After solder is removed, keep the lead moving and continue applying vacuum for an additional 2 seconds until the joint has cooled enough to prevent resweating. Remove tip and stop the vacuum.

SMT Land Preparation

Proper land preparation is the key to successful repair. To obtain optimum results, follow these steps.

1. After component removal, clean the land area of old flux residue using an approved solvent or cleaner. Insure that pcb is free of moisture. Preheat high thermal mass assemblies (i.e., multilayer, ceramic or polyamide substrates). PACE recommends use of the HotSpot for this purpose.

2. Apply a thin coat of an approved liquid flux to the lands.

3. Ensure that the handpiece air hose is properly connected to the VisiFilter and **SNAP-VAC** (or **VACUUM OPTION**) Port of the power source. Select a tip operating temperature which will cause complete solder melt immediately upon tip contact without causing heat damage to the lands.

4. Install the proper tip for your application.

   a) Use a Flo-D-Sodr Tip when the pc board is epoxy-glass or polyamide and component pitch is .025" (.7mm) or less.

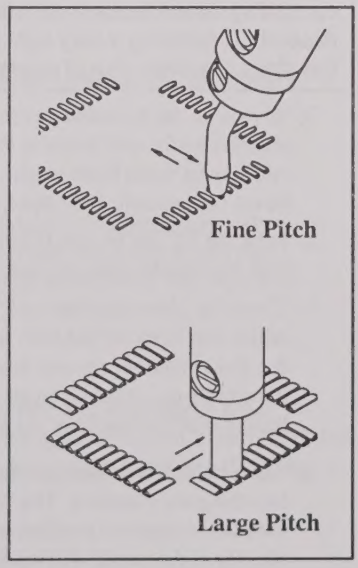
   b) Use the AdapTip and angled .030" Micro Tip (P/N 1121-0261) to individually clean lands when component pitch is less than .025" (.7mm)

5. Lower the tip over the land(s) where solder is to be removed.

6. Sweep along the length of each land or row of lands until all solder is removed using the appropriate procedure shown below.

   a) For use on all Fine Pitch (.025" pitch or less) applications: Using the Flo-D-Sodr Tip or angled Micro Tip, gently contact the solder. When the solder melts, activate vacuum and sweep along the length of the land until all solder is cleared. Deactivate vacuum and proceed to the next land.

   b) For use on polyamide and epoxy-glass substrate and land patterns .025" pitch and above (Large Pitch): Using a Flo-D-Sodr Tip, gently contact the solder, activate vacuum and sweep along the length of each row of lands while maintaining vacuum until all solder is removed.



7. After all lands are cleared, continue vacuum for an additional 5 seconds to clear all molten solder from the heater chamber.

Cleaning Solder Collection Chamber

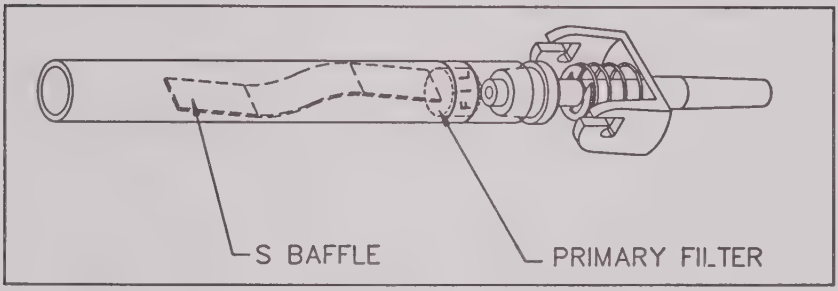
As the Sodr-X-Tractor is used, solder and flux buildup will begin to impede the airflow and decrease system performance. Regular cleaning of the glass chamber will prevent this buildup.

1. While holding the Sodr-X-Tractor, tip up, remove the end cap assembly from the rear of the handpiece. This action is accomplished by pushing the end cap assembly toward the front of the handpiece and turning counterclockwise to disengage. While continuing to hold upright, partially withdraw the end cap assembly and ensure that the glass chamber is attached to the end cap.

   If the glass chamber remains within the handpiece, refer to the "Frozen Chamber Removal" procedure.

NOTE - Do no attempt to remove the solder collection chamber (glass chamber) from the Sodr-X-Tractor using pliers or any like tool. The use of such tooling may cause the chamber to break. A frozen glass chamber is most often caused by failure to apply mineral oil to the front of the glass chamber prior to assembly. Applying a very light coat of mineral oil to the front inside edge of the glass chamber should prevent this situation from reoccurring.

2. To remove the glass chamber from the end cap assembly, grasp the glass chamber by the end closest to the end cap assembly. On a heated extractor this end may be warm to the touch. DO NOT touch the other end as it may initially be too hot to touch. If dropped, the glass chamber is likely to break.
3. Push the "S" baffle and filter from the glass chamber. A bristle brush may be used for this purpose.
4. Clean the glass chamber and "S" baffle with the large nylon bristle brush which has been wetted with an approved solvent. Run the brush through the glass chamber several times to remove solder and flux residues which have built-up. Apply a small amount of mineral oil to the brush and lightly coat the inside of the glass chamber and the "S" baffle.
5. Reassemble the collection chamber by installing the "S" baffle and filter into the glass chamber. The "S" baffle should have enough tension to maintain a constant position within the chamber. Bending of the baffle slightly at the center will readjust the tension. Do not attempt to bend the baffle while installed in the chamber. The filter element may be reused as long as it has not become clogged, hard or discolored from flux residues. The filter must line up with the markings on the glass chamber. The rear of the "S" baffle should be positioned touching the filter element.



6. To insure that the glass chamber will remain attached to the end cap assembly, seat the end cap assembly in the glass chamber and twist to secure in place.
7. Hold the Sodr-X-Tractor with the vacuum control switch in the upright position. Insert the glass chamber into the Sodr-X-Tractor. Slide the chamber into the handpiece and onto the front heater seal. Inspect for proper seating of the glass chamber on the front seal.
8. Attach the end cap assembly to the Sodr-X-Tractor by pushing forward and turning clockwise to lock into place.
9. Check all air hose fittings. Actuate the vacuum and ensure that proper vacuum flow is present at the tip.

Frozen Chamber Removal

The glass chamber can be easily removed if it remains in the handpiece when the end cap assembly is removed. Insert a small flat blade screwdriver into the handpiece and gently push the front end of the glass chamber off the front seal.

Tip Cleaning

During heavy, continuous desoldering, on boards with flux residues or other contamination, the tip may occasionally become clogged with such material. If this should occur, clean the tip with the Tip Cleaning Kit (PACE P/N 6993-0151) by inserting the wire tool into the tip end.

Special Applications

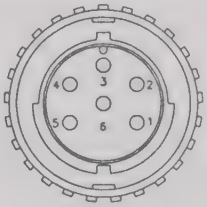
If you require assistance in the use of this handpiece or with a special application, contact PACE Applications Engineering at:

Telephone: (301) 490 - 9860 Fax: (301) 604 - 9215

Corrective Maintenance

Your SX-70 requires no special maintenance other than being kept clean. The heater bore and the heater assembly set screw which secures the tip must be kept free of oxidation and debris in order to maintain the proper tip-to-ground resistance.

Refer to the Connector Plug Pinout illustration and the table below for information on troubleshooting most handpiece problems. Disconnect the handpiece from the Power Source and perform the "Heater Assembly Checkout Procedures" with the handpiece (and heater) at room temperature. Use a meter to check resistance across the handpiece Connector Plug pins as outlined in the "Checkout Procedure" column.



Connector
Plug Pinouts

SYMPTOM	CHECKOUT PROCEDURE	CAUSE	SOLUTION
No heat	Check resistance - Pin 2 to Pin 5. Resistance should be 8.2 to 9.5 ohms. If not -	Open Heater	Replace Heater Assembly
	Check resistance - Pin 3 to Pin 6. If circuit reads open -	Open Sensor	Replace Heater Assembly
Handpiece overheating	Check resistance - Pin 3 to Pin 6. Resistance should be 110 ohms. If circuit reads less than 105 ohms -	Shorted Sensor	Replace Heater Assembly
Fuse blows when unit is turned on	Check resistance - Pin 2 to Pin 5. Resistance should be 8.2 to 9.5 ohms. If not -	Shorted Heater	Replace Heater Assembly
No Ground on Tip	Check resistance - Pin 4 to a NEW Tip. Resistance should be less than 2 ohms. If not -	Oxidation buildup in Heater Bore	Clean Heater Bore using appropriate wire brush
		Defective Heater	Replace Heater Assembly

Heater Assembly Checkout Procedures

Replacement Parts

DESCRIPTION	PART NUMBER
Handle Assembly Kit	6993-0140
Heater Assembly	6010-0080-P1
Heater Set Screw	1348-0547-P10
Front (heater) Seal	1213-0033
Cord/Switch Assembly	4010-0098
Rear Seal Assembly	4010-0101
Glass Chamber	1265-0009-P1
Tubing, Silicone, Translucent, 54 Inches Long	1342-0001-13
Holder, Tube To Wire (pkg. of 6)	1321-0085-01
"S" Baffle	4010-0033
Filter (glass chamber)	1309-0018-P50
VisiFilter	1309-0028
VisiFilter Replacement Elements	1309-0027-P50
Tip Tool	1100-0206
Wire Brush, 3/16" Diameter	1127-0014-P5
Bristle Brush	1127-0002-P5
Sodr-X-Tractor Tip Cleaning Kit	6993-0151
PACE Screwdriver	1100-0230
Handpiece tips listed last page	- - - - - - - -

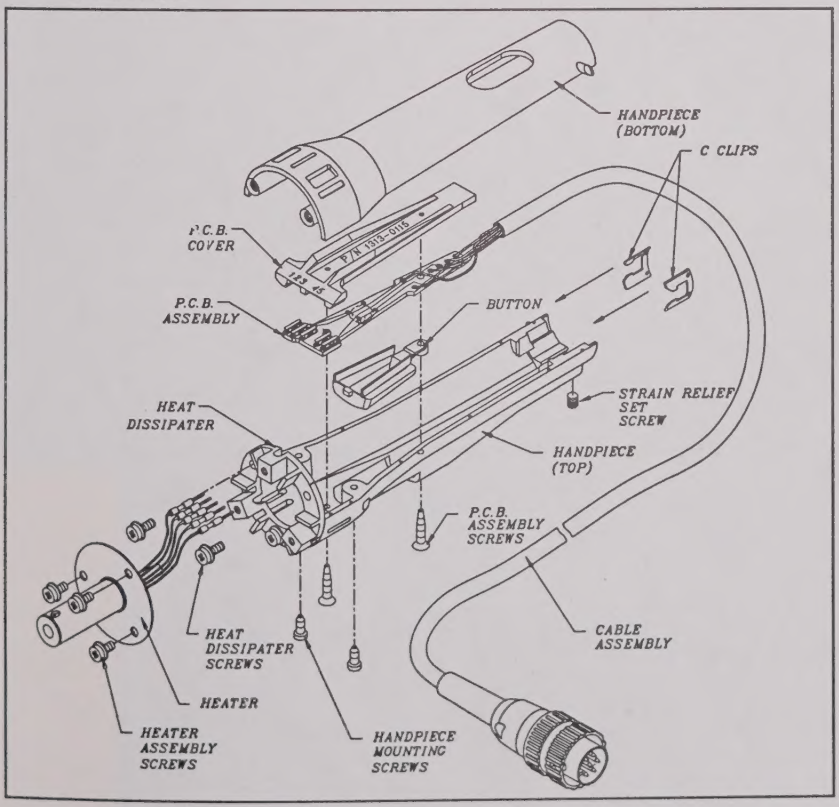
Replacement Parts

Heater Replacement

Ensure that the installed heater assembly of your handpiece is defective by referring to the Corrective Maintenance section of this manual. Follow the below procedure and refer to the illustration as a guide to replace the SX-70 Heater.

1. Remove and set aside any installed tip from the handpiece.
2. Disconnect the SX-70 handpiece from the power receptacle of the power source.
3. Remove the end cap assembly and the glass solder collection chamber from the handpiece.
4. Remove the two (2) C Clips located at the rear of the handpiece.
5. Remove the two (2) Handpiece Mounting Screws which secure the top and bottom halves of the handpiece together.
6. Remove the three (3) Heater Assembly Screws. Allow the Heater to hang loose. **DO NOT** pull the Heater from the handpiece at this time.
7. Remove the two (2) Heat Dissipater Screws which attach the Heat Dissipater to the Handpiece (Bottom). Refer to the illustration. **DO NOT** remove the third screw attaching the Heat Dissipater to the Handpiece (Top).
8. Remove the Handpiece (Bottom).
9. Remove the two (2) PCB Assembly Screws. Set the PCB Cover aside.
10. Using needle nose pliers, disconnect the five (5) Heater leads plugged into the Cord and Switch Assembly. Remove the defective Heater from the handpiece.
11. Install the new Heater leads through the Heat Dissipater. Using needle nose pliers, carefully plug the five (5) color coded leads of the replacement Heater into the receptacles of the PCB Assembly. Plug the Tan leads into the jacks along either edge of the pcb (#1 and #5; see PCB Cover markings on illustration). Plug the Green lead into the center jack (#3). Plug the two (2) Blue leads into the two (2) remaining jacks (#2 and #4).
12. Place the PCB Cover back over the PCB Assembly. Attach to the handpiece using the two (2) screws removed in step #9.

13. Reassemble the handpiece in the following order.
    a) Replace the Handpiece (Bottom) removed in step #8.
    b) Replace the two (2) Heat Dissipater Screws removed in step #7.
    c) Replace the three (3) Heater Assembly Screws removed in step # 6.
    d) Replace the two (2) Handpiece Mounting Screws removed in step #5.
    e) Replace the two (2) C Clips removed in step #4.
    f) Replace the glass solder collection chamber and the end cap assembly removed in step #3. Replace the tip.
14. Connect the handpiece to the power source and follow the "SX-70 Heater Burn-in" procedure (Red tag on handpiece) to increase the life expectancy of the heater.



Heater Replacement

Shown below is a listing of all tips used on the SX-70 Sodr-X-Tractor handpiece which are available from PACE at the time this manual was written. As new components and repair procedures evolve however, PACE will develop new tips to address these applications. For an up-to-date listing of all currently available tips, refer to the latest issue of our "Tips & Applications" catalogue.

	Outside Diameter	Inside Diameter	Part Number
Flo-D-Sodr Tip	0.187" 4.75mm	0.060" 1.52mm	1121-0369
Long Life Flo-D-Sodr Tip	0.196" 4.98mm	0.060" 1.52mm	1121-0465
Thermo-Drive 3/16" Shank Desoldering Tips	0.060" 1.52mm	0.030" 0.76mm	1121-0367
	0.070" 1.78mm	0.040" 1.02mm	1121-0342
	0.100" 2.54mm	0.060" 1.52mm	1121-0368
Long Life 3/16" Shank Desoldering Tips	0.075" 1.91mm	0.030" 0.76mm	1121-0462
	0.085" 2.16mm	0.040" 1.02mm	1121-0463
	0.106" 2.69mm	0.060" 1.52mm	1121-0464
AdapTip (allows use of 1/8" Shank Micro Tips)	.188" (4.76mm)	.125" (3.2mm)	1360-0083-P1
Micro Tips (Must Be Used With AdapTip)	.125" (3.2mm)	0.030" (0.76mm)	1121-0253
	.125" (3.2mm)	0.040" (1.02mm)	1121-0254
	.125" (3.2mm)	0.060" (1.52mm)	1121-0255
	.125" (3.2mm)	0.030" (0.76mm)	1121-0261
	.125" (3.2mm)	0.040" (1.02mm)	1121-0262
	.125" (3.2mm)	0.060" (1.52mm)	1121-0267

Available SX-70 Tips